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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
UNITED STATES DESIGNATED/ELECTED OFFICE

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International Application
PCT/JP98/00960

U.S. Filing Date: Herewith

Int'l Filing Date: March 9, 1998

For: Printed Wiring Board and
Method for Manufacturing
the Same

GAU:

Examiner:

Atty. Docket No. 23128 USA

The Assistant Commissioner
for Patents
Washington, DC 20231

FIRST PRELIMINARY AMENDMENT

Sir:

Prior to calculation of the filing fee and examination on the merits, please amend the above-identified patent application, without prejudice, as follows:

In the Drawings

Please amend the drawings as noted below:

In Figs. 15 and 20, please change element number "230" to --232--, as indicated in red on the attached copies of Figs. 15 and 20.

In Figs. 38 and 41, please change element number "313" to --413--, as indicated in red on the attached copies of Figs. 38 and 41.

In Figs. 42 to 51, please add the legend --Prior Art--, indicated in red on the attached copies of Figs. 42 to 51.

In the Specification

Page 1, line 1, delete "SPECIFICATION".

Page 1, line 3, delete "TECHNICAL FIELD" and insert therefor --Background of the Invention--; and

line 14, delete "BACKGROUND ART";

Page 4, line 2, delete "914" and insert therefor --941--.

Page 7, line 7, delete "DISCLOSURE OF THE INVENTION" and insert therefor --Summary of the Invention--.

Page 7, line 16, delete "," and insert therefor --. The --;

line 16, delete "the";

line 19, delete "," and insert therefor --.

The--; and

line 19, delete "the".

Page 9, line 25, delete "; the" and insert therefor --. The--.

Page 15, line 11, delete "; the method comprising" and insert therefor --. The method comprises--.

Page 28, delete line 18 to page 30, line 7, and insert therefor --Detailed Description of the Invention--.

Page 32, line 18, delete "1" and insert therefor --10--.

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Page 33, line 3, after "mother board 8" insert --(Fig. 1)--.

Page 34, line 18, delete "fourth" and insert therefor --third--; and

line 18, delete "24" and insert therefor --23--.

Page 37, lines 23 and 24, delete "11" and insert therefor --115--.

Page 38, line 16, delete "1185" and insert therefor --118--.

Page 38, line 20, after "wiring board" insert --101--.

Page 39, line 6, delete "11" and insert therefor --115--; and

line 27, delete "consisting of" and insert therefor --comprising--.

Page 40, line 18, delete "11" and insert therefor --118--.

Page 41, line 26, after "holes" insert --210, 220, 230--.

Page 42, line 19, after "board" insert --209--.

Page 43, line 3, delete "51" insert --12--.

Page 43, line 20, delete "230" and insert therefor --232--; and

line 28, after "substrate" insert --201--.

Page 44, lines 16 and 17, delete "230" and insert therefor --232--; and

line 24, after "substrate" insert --201--.

Page 46, line 2, delete "covered" insert --filled--;

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line 14, delete ", so that" and insert therefor
--.--; and delete line 15;

line 25, delete "31" and insert therefor
--231--; and

line 26, delete "33" and insert therefor
--233--.

Page 47, line 5, delete "fourth" and insert therefor
--fifth--; and

line 27, delete "305" and insert therefor
--355--.

Page 48, line 10, after "wiring board" insert --305--.

Page 50, line 2, after "substrate" insert --307--; and

line 15, delete "305" and insert therefor
--355--.

Page 51, line 4, delete "305" and insert therefor
--355--;

line 5, after "resist" insert --306--; and
line 13, delete "305" and insert therefor
--355--.

Page 53, line 4, before "the opening", insert --at least
a portion of--.

Page 57, line 9, delete "313" and insert therefor
--413--.

Page 58, lines 6 and 9, delete "313" and insert therefor
--413--.

Page 60, lines 18 and 24, delete "313" and insert
therefor --413--; and

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line 26, delete "325" and insert therefor

--302--.

Page 61, lines 3 and 5, delete "313" and insert therefor

--413--.

In the Claims

Please amend claims 3, 11, 15 and 18, as follows:

3. (Amended) A method of manufacturing a printed wiring board having an odd number n of conductive layers which are built up via insulating layers respectively and are electrically connected to one another via interconnecting through holes, the method comprising the steps of:

interposing insulating layers between the second to n -th conductive layers respectively and also forming first interconnecting through holes for electrically connecting the conductive layers to one another;

laminating a first prepreg and a copper foil on a surface of the second conductive layer, [while laminating] and press-bonding a second prepreg on a surface of the n -th conductive layer to form a multilayer substrate having an odd number n of insulating layers, wherein [and also locating] the second n -th conductive layers [as] are internal layers of the multilayer substrate;

etching the copper foil to form a first conductive layer;

forming a second interconnecting through holes in the first insulating layer and forming connecting holes in the n-th insulating layer respectively;

forming a metal plating film for electrically connecting the first conductive layer with the second conductive layer on the walls of the second interconnecting through holes of the first insulating layer; and

connecting external connecting terminals to the surface of the n-th conductive layer exposed through the [interconnecting through] connecting holes of the n-th insulating layer.

11. (Amended) A printed wiring board comprising:
an insulating substrate having at lease one
interconnecting through hole penetrating [an] the insulating substrate [,] ;

a covering pad covering [one] a first opening of the interconnecting through hole [, and];

a conductor circuit provided along a peripheral edge of [the other] a second opening, opposite the first opening, which remains open;

[wherein] a metal plating film electrically connecting the covering pad and the conductor circuit, the metal plating [are electrically connected to each other via a metal plating film] covering a wall of the interconnecting through hole; and

a solder ball for external connection [its bonded onto the] located on a surface of the covering pad at a position offset from the interconnecting through hole.

15. (Amended) A printed wiring board comprising:
an insulating substrate having at least one interconnecting through hole penetrating [an] the insulating substrate [,];

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an annular pad disposed along a peripheral edge of [one] a first opening of the interconnecting through hole so as not to cover the first opening [,];

a covering pad covering [the other one] a second opening of the interconnecting through hole; [, and]

a conductor circuit connected to the covering pad;
[wherein] a metal plating film electrically connecting the annular pad and the covering pad, the metal plating film [are electrically connected to each other by a metal plating film] covering a wall of the interconnecting through hole; and

a solder ball for external connection [is] bonded [onto the] on a surface of the annular pad at a position offset from the interconnecting through hole.

REMARKS

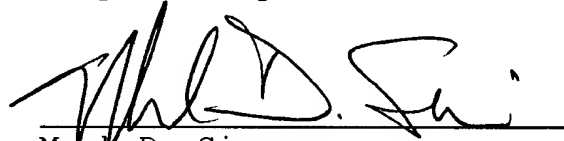
After the foregoing amendment, claims 1-4, 7, 10-11, 14-15 and 18 are active in the present application.

The specification and claims have been amended to place them in better form for examination. No new matter has been

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added by the amendment. Consideration and allowance of the application as amended, are respectfully requested.

Respectfully submitted,



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Enclosures